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NON-FUNGIBLE TOKEN: A DISRUPTIVE FINANCIAL ASSET FOR INVESTMENT OR A POTENTIAL BUBBLE

In the era of digitalization, innovation in the field of financial technology is inevitable. Natural disasters quite often open up the door for innovation, Covid pandemic has done the same in the field of technology in financial markets and emerged as potential disruptive financial digital asset. Non-fungible tokens which are unique digital assets can be bought, sold, displayed, gifted, or even destroyed just like personal property. In last couple of years emerging NFTs have received investors' attention as an alternative digital asset for investment and trading. NFTs have recently exploded far beyond their initial large successes and gained popularity across the world. In financial world any asset exhibiting exponential growth in volumes and price may pose risk to the market as potential bubble if such rapid rise in volume/price is not supported by fundamentals. Previous research on this subject has primarily focused on price/volume relationship, adaptation as safe heaven asset etc. but has failed or done very little to demonstrate its future prospects in financial market or a threat as a bubble. In the article we discussed the nascent fintech innovation – non-fungible tokens in terms of its future prospect. Literature on NFTs and other digital assets were studies, discussions with professional investors/traders were made and various articles on Reuters and Bloomberg were picked for qualitative assessment of this subject. Contrary to what has been researched so far by other scholars, study exposed some constraints for NFTs to become a perfect disruptive digital asset. This paper highlighted all the fundamental concerns associated with NFTs along with its resolutions.

Keywords: non-fungible token, fintech, cryptocurrencies, financial services, investment, innovations, blockchain technology, digital assets, digital property, market, digital economy.

Кілт сөздер: алмастырылмайтын токен, финтех, криптовалюта, қаржылық қызметтер, инвестиция, инновациялар, блокчейн технологиясы, цифрлық активтер, цифрлық меншік, нарық, цифрлық экономика.

Ключевые слова: невзаимозаменяемый токен, финтех, криптовалюта, финансовые услуги, инвестиция, инновации, технология блокчейн, цифровые активы, цифровая собственность, рынок, цифровая экономика.

Introduction. In the era of digitalization, innovation in the field of financial technology is inevitable. Recent natural disaster, Covid pandemic has further accelerated the pace of innovation in this field which has the potential to radically transform financial services by making transactions more economical, convenient, and secure. Crypto currencies are essentially an unavoidable and welcome transformation in the emerging financial technology landscape. After cryptocurrency, the game changer innovation of blockchain technology was unique digital assets called non-fungible tokens. An NFT is a digital asset that can be bought and sold online. Cryptocurrencies like Bitcoin, where coins are fungible, meaning one coin is the same as another, non-fungible tokens are unique. NFTs are blockchain-enabled applications that encode, either on-chain or off-chain, unique content in smart contracts for secure verification of provenance [1]. The first known NFT which was minted in May 2014 but recent momentum in NFTs after the launch of Ethereum blockchain have received investors' attention as an alternative asset and since then it has not seen back, growing rapidly with exponential returns. What fascinates the buyers is that unlike digital assets like e-books or movies, these non-fungible tokens can be bought, sold, destroyed, gifted, or even rented just like another financial asset.

NFTs have recently exploded far beyond their initial large successes and gained popularity across the world. It is estimated that the NFT market size is expected to grow from USD 2.9 billion in 2022 to over USD 12 billion by the end of 2027 if present constraints to its growth like high fee, poor user experience, defective copyright protection etc are addressed properly. Despite the fact that NFT market is rapidly growing, development on legal front has failed to keep pace with the demand of this unique asset class. The NFT market place is still struggling to find a legal environment which would be favourable for full, real, digital ownership of NFT. This demands an urgent need to shift global legal framework to manage new technological innovations. NFTs assets being personal property in nature requires well defined intellectual property interests in order to attract more investors but NFT market place lacks the legal framework to

verify the real ownership of the asset. It is important therefore, to develop the legal structure for innovations in financial space like NFTs, to have foundational and grounding example of personal property online.

NFTs being a controversial topic in the field of economics and finance, due to its non-fungibility, these unique digital assets have opened up new investment/trading opportunities for millions of people worldwide and transforming financial market as well as the digital economy. There is also greater market proficiency because tokens can be traded twenty-four hours and seven days on existing global exchanges, making it possible to imagine a future where the secondary market will operate round the clock in spite of time differences and geography. Although many scholars have explored the financial feasibility of non-fungible tokens in terms of its feasibility as investment or trading asset but still there is not much research work carried out in the area of its acceptability as an alternate asset class for long term investment option or as trading. There is still ample scope to research on fundamentals of NFTs to have a better understanding of its future in financial world.

The main purpose of the article is to provide a deductive analysis of the advent of NFT as potentially disruptive bubble or investment within the current financial regime and find the future of NFTs in terms of trading or investment.

NFTs being the perfect example of radical innovation, has shown the financial world that it has potential to disrupt digital assets creation. Despite the fact that it is a highly nascent product, its booming volumes has created early disruption in the financial market. Such swift growth of financial technology demands considerable attention within the finance scholars and opens up new areas of research in this field.

The objective of the study is to understand the various NFTs, its attributes which has placed this unique digital asset in financial market at distinctive position during its early stage of evolution. The study would further help to conclude about the future prospect of this asset as well. This paper has tried to analyze the results of earlier research on NFT, with a focus on the economic and finance domains. The idea was taken from research methodology of Bao and Roubaud with inclusion and exclusion criteria [2].

As the paper required subjective assessment of previous research papers published in Scopus, opinions from focus group, various articles/news about the topics published in different economic/financial papers qualitative approach was used in this study for screening and analyzing data to identify the NFT as an alternate digital asset for investment or a bubble. Study's main focus was to understand the various attributes of NFTs which can make any asset the perfect investment/trading option for investors. Literature from the journals published in Scopus database was selected by searching with keyword "NFT", filtering only Business, Management and Accounting, Economics, Econometrics and Finance areas in their titles, abstracts, and/or keywords. Small focus group of 10 participants of investors and traders from different financial institutions was formed to have expert opinion and perspectives on NFTs. Participants for the focus group were carefully chosen and were contacted online to save time.

Recently many studies were made on NFTs using quantitative approach but as the objective of the study was exploratory which needed subjective analysis, we had to rely on qualitative approached for this research.

Literature review. A new and novel way for blockchain technology to certify ownership of and tradeable rights to digital assets is non-fungible tokens (NFTs). In simple words, an NFT is a blockchain-recorded right to a digital asset. This can be anything digital; an image, a video, a song, a digital trading card of your favourite baseball player, a coded piece of virtual land, or a virtual tunic for your virtual character to wear while he explores his virtual land. According to Yanto Chandra NFTs is a system to claim, represent, store, and move value (i.e., within virtual worlds) using smart codes [3]. He has examined the concept of NFT enabled Entrepreneurship where individuals can do activities using NFT on the internet platform.

Nadini et al. studies the NFT ecosystem through the sales and traded volume based on different projects, stakeholders and other relevant characteristics [4]. Similarly, Ante analyzes major NFT submarkets on the Ethereum blockchain and identifies co-movements between them, investigates the interrelationships between NFT sales, NFT users (unique active blockchain wallets), and the pricing of Bitcoin (BTC) and Ether (ETH) [5]. The results suggest that (larger) cryptocurrency markets affect. The growth and development of the NFT market which is smaller in comparison to cryptocurrency market gets affected by it. Dowling examines the pricing behavior of a particular NFT project, Decentraland, which is a software based on Ethereum where users can buy or sell digital plots of land using blockchain-technology [6]. In other similar study, Dowling used wavelet coherence analysis to find out relationship in price movement between the cryptocurrency and the NFT markets [7]. In his study he monitored three major NFT submarkets named Decentraland, CryptoPunks and AxieInfinity, in addition to prices movement of Bitcoin and Ether.

The study of price movement exhibits that the most of the time price movement in NFTs is independent from other asset classes [8]. Thus, NFTs plays the role of transmitters of systemic risk to some degree, but during “risk off” period, role gets shifted to act as absorbers of risk spillovers. It is evident from this study that investing in NFTs can be beneficial due to diversification benefit during turbulent times and there is a clear independence of NFTs from other asset classes.

Karim et al., Wang examined the interrelatedness of NFTs, DeFi tokens and cryptocurrency [9, 10]. Results demonstrated that the spillovers between NFTs and other assets are much higher in extreme market conditions than that of normal times. NFT markets are volatility spillover receivers. In addition, NFT assets could impede financial contagion and have significant diversification benefits. Yousaf and Yarovaya studied the quantile connectedness for returns-volume and volatility-volume pairs for the three non-fungible tokens [11]. The findings showed highest connectedness of volume with returns and volatility in the extreme upper quantile compared to other quantiles, indicating the asymmetric connectedness. Even the spillover effect was noted in that study from volume to returns and volatilities in extreme upper and lower market conditions, whereas opposite direction of spillovers is evident for the selected non-fungible tokens at median quantile.

NFTs are different from earlier cryptocurrency, where one unit or coin is exactly the same as another. The term non-fungible itself explains that it cannot be interchanged or replaced due to its unique attributes. These tokens are digital asset that can represents artwork, music or games using blockchain technology which can be further bought, sold, and owned like other asset, the only difference is that the ownership is managed by electronic deeds that can be transferred from one person to another. The growth in NFT has postured a dilemma for investors as to whether it is a bull market in a new asset or a bubble.

Results and Discussion. Trading on blockchain platform: NFTs being traded using blockchain technology, have the added advantage of being easily transferable and tradable. Blockchain technology also provides an instant proof of authenticity and provenance, which eliminates counterfeit and enhances market efficiency.

Advantage of digitally trading: Covid pandemic emphasized the trend of digital environment and one of the unique features of NFT is its accessibility which is digital. Web 3 has developed a new set of community that trades and upholds these digital assets, since the supply is limited and the demand is growing with more traders joining this community, this creates an upward trend of the prices of the underlying asset.

Diversification: To mitigate risk, diversification is the fundamental rule. Although there were skyrocketing returns in different cryptocurrencies in recent past but still investors had been looking an alternate investment option fearing the bubble in crypto market. NFTs which offered investors another option for investing with unique set of attributes, gained popularity quickly.

Illiquid market with substantial volume drop: Being in its nascent stage of development NFT market initially witnessed sharp growth, but volumes tumbled sharply by September 2022 to \$466 million from January 2022 peak of \$17 billion. NFT market place has to provide sufficient assurance to market participants about risk, return, safety and liquidity to accept it as an alternative investment option. In absence of these attributes, chances of NFTs gaining the status of high quality liquid assets would be doubtful. High quality liquid assets are assets which can be converted in to cash any time without any loss in its value. Such drastic collapse in trading volumes would make NFTs an illiquid asset class and would fail to attract investors. Although investors argue that this substantial fall in volumes is attributed to tightening of monetary policy across the globe and geopolitical tensions but still such huge fall in volumes cannot be justified by these rationales alone. For the sub-markets and the entire NFT market there are reliance between return and volume (Fig.1). Market participants and investors can initiate volume-based strategies with respect to the market performance of the aggregate NFTs market.

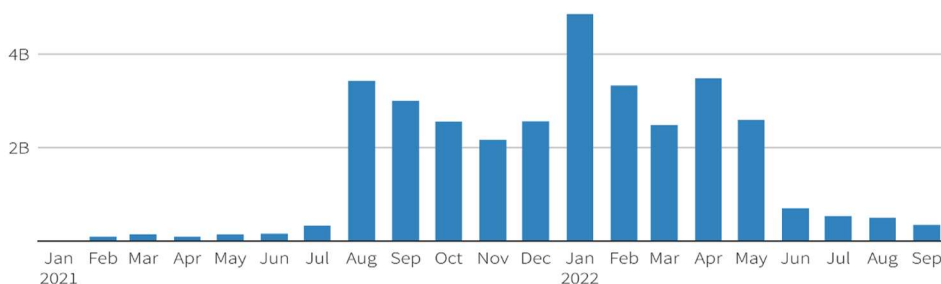


Figure 1. Monthly sales of non-fungible tokens (NFTs) on OpenSea marketplace, in U.S. dollars [12]

Highly volatile asset class: NFTs are risky assets and have potential to offer higher returns to investors than other assets. Being riskier asset and exposed to high price volatility, returns in this asset class depends upon economic conditions globally. In general, investors have substantial appetite for risky assets during “risk on” period than during “risk off” period. Inclusion of forward contracts in NFTs market may stabilized the price volatility up to some extent. This financial tool would lock the future price making of the assets, making the market less volatile. Further, investors can diversify their traditional asset-based portfolios through the inclusion of NFTs in their investment baskets which is the basic rule of any investment to mitigate the risk of concentration. NFTs and Defi assets can offer higher returns than other assets for investors according to Table 1 [13]. Volatility spillovers and static return analysis demonstrated that spillovers from (to) oil, gold, and stock market to (from) system are weak. It clearly shows that NFTs and Defi assets are weakly connected with oil, gold, and stock markets.

Table 1

Data: 24 hours % change in NFT prices as on 30.10.2022

Sr.	NFT	Volume	% Change
1	Hashflow	4 ETH	21290
2	The Personal Teddies	1 ETH	18350
3	Sales Whales	19 ETH	13833
4	Gala Games Collectibles	1 ETH	6667
5	Stampu	0.70 ETH	6173
6	FCF Ballerz Collective	0.59 ETH	5778
7	Heaven Computer	6 ETH	5400
8	BBRC	2 ETH	3916
9	Year of the Woman	1 ETH	3233
10	Deltaflare Pink Ladies	0.91 ETH	3227

Speculative price discovery: Apart from being extremely volatile investment option NFTs also have challenges with the most pronounced being that they are illiquid and speculative in nature. NFTs still being in its very early stage with no proper mechanism for price discovery and their value is still derived on the presumption the token may be used in the future for something. Moreover, unlike other speculative investments, the NFTs are also not backed by commodities.

No financial incentive for holding NFTs: To become an alternate investment option for any asset class regular income is one of the foremost criteria. Buying and collecting the NFTs in digital valet is surely not cheap. To generate returns for passive NFT owners renting/leasing NFT mechanism using smart contracts to be developed. The renting /feature would not only help address the liquidity but would reduce the overhead of having to sell the NFT as well. Additionally, it would be beneficial to owners who are reluctant to sell their assets because of potential long-term gains. Renting can be either collateralized or non-collateralized, the only difference between the two is that in collateralized renting/leasing borrower is required to deposit the collateral higher the price of NFT whereas in other case no collateral is required. In non-collateralized renting/leasing borrower never gets the original NFT. Borrower gets a wrapped NFT with same characteristics of original NFT specially minted for renter, once contract is expired the wrapped NFT (backed by original NFT) is burned.

Future bubble: Phillips and Shi defined a bubble as an explosive behavior of an asset price, representing exuberance in the speculative behavior driving the market [14]. This definition helps to identify bubbles by their time series characteristics. When in market price of the asset follows one way (up) direction without any fundamentals supporting this rise, there are high chances of forming bubble in market NFT market place has high potential of forming such bubbles during “risk on” period in absence of sufficient liquidity and well-defined price discovery mechanism.

Lacks clarity about rights: Another key issue wide spreading in NFT market place is confusion among buyers of NFT about the rights which buyer acquire when they purchase NFT. Few think they acquire the underlying work of art along with all its accompanying rights. However, in reality, it is not the case buyer is simply buying the metadata associated with the work.

Absence of legal framework: NFT has exacerbated new challenges such as speculation, fraud, and high volatility. NFT market is not control by any government. Many countries are coming forward with their own

approaches to deal with this market. In absence of any well-defined legal framework, future acceptance of NFTs as an investment option would remain doubtful. Efficient global legal framework is required to evolve for these virtual assets to safeguard buyers' interest for such kind of online ownership that has until now not been available. In long term, when it comes to investment market participants always weigh safety of investment more than its returns. NFTs value is based on the free forces of demand and supply. It is not influenced by the input of external forces such as central banks, financial institutions or other governmental authorities. It does not have a physical form. There is no insurance, no government backing.

Copyright infringement issue: Concerns are growing in NFT market from copyright perspective as there were several instances of copyright infringement. Unified copyright laws need to be framed to protect investors interest of over a period of time. NFTs are expressly sold on the basis of online accounts of ownership. In order to sell something, we must own it first. Disputes to ownership due to copyright may affect the growth of NFT market adversely. In contrast, few countries have started imposing withholding tax on transfer of digital assets which will certainly slower the growth of virtual digital trading in these countries.

Cyber threats: The widespread popularity of NFT has significantly exposed the risk of cyber threats to NFT owner. Cyber hackers are one step ahead to find out new ways to hack user account and steal tokens. Although NFT market place is highly protected with multiple steps verification but still the chances of cyber-attack may not be ignored due to new tech innovations.

Conclusion. NFT market place has witnessed immense growth in past couple of years and has huge potential to offer the same in future as well. NFT has created opportunities for new business models that which never existed before. Being traded on blockchain platform, this market has high degree of reliability over ownership authenticity, transferability and market efficiency. Studying the nature of this market, it is evident that there is ample scope for exponential returns but on the same time if copyright infringement issue is not addressed properly, NFT market may generate a good number of copyright disputes as well.

Despite the fact that NFTs had brilliant start but still due to various concerns mentioned above there may be some sets of investors who may, understandably, be reluctant to invest significant resources to this nascent asset class whose future is under debate for them.

NFTs being traded cross border Global legal frame work need to be established for copyright infringements to protect NFT buyer's interest. With adoption of alternate and efficient blockchain technology there would be significant drop in hidden and high-cost fee which would make this asset class further attractive. To address liquidity issue and generate returns for buyer of NFT, secondary market of renting/leasing using smart contracts may be developed.

Traditional asset class like gold or even cryptocurrencies, have some practical uses like medium of exchange whereas NFTs lack on this front. But emergence of renting/leasing of NFTs may open up new sphere for earning returns while holding NFTs.

Investments in alternative assets continue to grow since the start of Covid Pandemic. Preqin forecasts that between the end of 2020 and the end of 2025, global alternative assets under management (AUM) are expected to increase by 60 percent, with CAGR of 9.8%.

Although this rapid growth in NFT market has attracted many investors worldwide as they find it as a new opportunity to invest. But still the fundamentals of this market yet to be recognize by many investors due to novelty of this asset class.

NFT has certainly the potential of becoming an alternative investment option but as the market is still in its nascent stage of disruption, it has posed many concerns like high volatility, illiquidity, no legal framework etc which are still to be addressed in order to make it a perfect alternate investment option in coming years and this opens up scope for future research on this subject by expanding the focus group, adding more participants from different geographies and analyzing price/volume data and other legal regulatory framework related to NFTs.

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АЛМАСТЫРЫЛМАЙТЫН ТОКЕН – БҮЛ ИНВЕСТИЦИЯЛАР ҮШІН ЖОЙҚЫН ҚАРЖЫЛЫҚ АКТИВ НЕМЕСЕ ЫҚТИМАЛ КӨПІРШІК

Андатпа

Цифрландыру дәуірінде қаржылық технологиялар саласындағы инновациялар сөзсіз. Табиғи апаттар инновацияға жиі жол ашады, Covid пандемиясы қаржы нарықтарындағы технологиялар саласында да солай жасады және қаржылық технологиялар ықтимал жойқын қаржылық цифрлық активке айналды. Бірегей цифрлық активтер болып табылатын ауыстырылмайтын токендерді жеке меншік ретінде сатып алуға, сатуға, көрсетуге, беруге немесе тіпті жоюға болады. Соңғы екі жылда жаңа NFT инвесторлардың назарын инвестициялар мен сауда үшін балама цифрлық актив ретінде аударды. Соңғы уақытта NFT өзінің алғашқы жетістіктерінен едәуір асып түсті және бүкіл әлемде танымал болды. Қаржы әлемінде көлем мен бағаның экспоненциалды өсуін көрсететін кез келген актив, егер көлемнің/бағаның мұндай жылдам өсуіне іргелі факторлар қолдау көрсетпесе, әлеуетті көпіршік ретінде нарыққа қауіп төндіруі мүмкін. Бұл мәселе бойынша алдыңғы зерттеулер негізінен баға/көлем қатынасына, қауіпсіз актив ретінде бейімделуге және т.б. бағытталған, дегенмен қаржы нарығындағы болашақ перспективаларын немесе көпіршік түріндегі қауіп-қатерді көрсете алмады немесе өте аз жұмыс жүргізілді. Мақалада біз финтех саласындағы жаңашылдықты – оның болашағы тұрғысынан алмастырылмайтын токендерді талқыладық. NFT және басқа да сандық активтер туралы әдебиеттер зерттелді, сарапшы инвесторлармен/трейдерлермен пікірталастар жүргізілді және осы тақырыпты сапалы бағалау үшін Reuters және Bloomberg сайттарында әртүрлі мақалалар таңдалды. Осы уақытқа дейін басқа ғалымдар зерттегеннен айырмашылығы, зерттеу NFT-тің тамаша серпінді цифрлық активке айналуына жол бермейтін кейбір шектеулерді анықтады. Бұл мақала NFT-ге қатысты барлық негізгі мәселелерді, сондай-ақ оның шешімдерін қамтиды.

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НЕВЗАИМОЗАМЕНЯЕМЫЙ ТОКЕН – ПОДРЫВНОЙ ФИНАНСОВЫЙ АКТИВ ДЛЯ ИНВЕСТИЦИЙ ИЛИ ПОТЕНЦИАЛЬНЫЙ ПУЗЫРЬ

Аннотация

В эпоху цифровизации инновации в сфере финансовых технологий неизбежны. Стихийные бедствия довольно часто открывают двери для инноваций, пандемия Covid сделала то же самое в области технологий на финансовых рынках и финансовые технологии стали потенциально разрушительными финансовыми цифровыми активами. Не взаимозаменяемые токены, которые являются уникальными цифровыми активами, можно покупать, продавать, отображать, дарить или даже уничтожать, как личную собственность. За последние пару лет новые NFT привлекли внимание инвесторов как альтернативный цифровой актив для инвестиций и торговли. В последнее время NFT значительно превзошли свои первоначальные успехи и завоевали популярность во всем мире. В финансовом мире любой актив, демонстрирующий экспоненциальный рост объемов и цены, может представлять риск для рынка как потенциальный пузырь, если такой быстрый рост объема/цены не поддерживается фундаментальными факторами. Предыдущие исследования по этому вопросу в основном были сосредоточены на соотношении цена/объем, адаптации в качестве безопасного актива и т. д., но не смогли или сделали очень мало, чтобы продемонстрировать его будущие перспективы на финансовом рынке или угрозу в виде пузыря. В статье мы обсудили зарождающуюся инновацию в области финтеха – невзаимозаменяемые токены с точки зрения ее будущей перспективы. Была изучена литература по NFT и другим цифровым активам, проведены обсуждения с экспертами-инвесторами/трейдерами, а для качественной оценки этого предмета были выбраны различные статьи на Reuters и Bloomberg. Вопреки тому, что до сих пор исследовали другие ученые, исследование выявило некоторые ограничения, препятствующие тому, чтобы NFT стали идеальным прорывным цифровым активом. В этом документе освещены все фундаментальные проблемы, связанные с NFT, а также его резолюции.

